

CLAIMS

What is Claimed is:

1. A system for electrically interconnecting a first circuit board having a power conditioning circuit and a second circuit board having a power dissipating component disposed therebelow substantially along a z-axis, comprising:
- 5 a first flexible circuit having a first set of raised conductive contacts, the first flexible circuit disposed on a first side of the second circuit board;
- a second flexible circuit having a second set of raised conductive contacts, the second flexible circuit disposed on a second side of the second circuit board opposing the
- 10 first side of the second circuit board; and
- wherein a power signal from the power conditioning circuit is provided to the second circuit board at least in part by one of the first set of raised conductive contacts on the flexible circuit and the second set of raised conductive contacts on the second flexible
- 12 circuit and a ground return is provided to the second circuit board by the other of the first
- 15 set of raised conductive contacts on the first flexible circuit and the second set of raised conductive contacts on the second flexible circuit.

2. A system for electrically interconnecting a first circuit board having a power conditioning circuit and a second circuit board having a power dissipating component disposed therebelow substantially along a z-axis, comprising:

a contiguous flexible circuit comprising:

5 a first flexible circuit portion having a first set of raised conductive contacts on a first side of the contiguous flexible circuit, wherein the first flexible circuit portion is disposed on a first side of the second circuit board;

10 a second flexible circuit portion having a second set of raised conductive contacts on the first side of the contiguous flexible circuit, wherein the second flexible circuit portion is disposed on second side of the second circuit board; and

14 wherein a power signal from the power conditioning circuit is provided to the second circuit board at least in part by one of the first set of raised conductive contacts on the first flexible circuit portion and the second set of raised conductive contacts on the second flexible circuit and a ground return is provided to the second circuit board at least in part by the other of the first set of raised conductive contacts on the first flexible circuit portion and the second set of raised conductive contacts on the second flexible circuit portion.

20 3. The system of claims 1 or 2, further comprising a z-axis in compliant coaxial assembly having an outer conductor and an inner conductor disposed within the outer conductor, the coaxial assembly for providing the power signal from the power conditioning circuit to the second circuit board and the ground return from the second circuit board to the power conditioning circuit.

25 4. The system of claim 3, wherein the coaxial assembly is disposed between the first and second circuit board.

5. The system of claim 4, wherein the coaxial assembly has a first end electrically coupled to the first circuit board by physical contact between the first end and a pad on the first circuit board, and a second end electrically coupled to the second circuit board by physical contact between the second end and a pad on the first flexible circuit or the second flexible circuit.

6. The system of claim 5, wherein the coaxial assembly is permanently attached to either the first circuit board or the flexible circuit.

7. The system of claim 5, wherein the coaxial assembly is permanently attached to both the first circuit board and the flexible circuit.

8. The system of claim 1, wherein:
the first flexible circuit further has a first set of tabs;
the second flexible circuit further has a second set of tabs; and
the power signal from the power conditioning circuit is provided to the second circuit board and the ground return is provided from the second circuit board to the power conditioning circuit by the first set of tabs and the second set of and wherein the first set of tabs and the second set of tabs are interdigitated.

9. The system of claim 8, wherein the first set of tabs are coupled to the first circuit board by a first set of pads on the first circuit board and the second set of tabs are coupled to the first circuit board by a second set of pads on the first circuit board.

10. The system of claim 1, further comprising a housing having:

a first housing section;

a second housing section;

5 the first housing section and the second housing section together forming an open end and a cavity, wherein at least a portion of the first flexible circuit and at least a portion of the second flexible circuit and at least a portion of the second circuit board is disposed in the cavity;

a first compressible member disposed between the first housing section and the first flexible circuit; and

10 a second compressible member disposed between the second housing section and the second flexible circuit.

11 The system of claim 6, wherein the first compressible member and the second compressible member is selected from the group comprising:

15 an elastomer; and

a spring.

12. The system of claim 2, further comprising a housing having:

a first housing section;

20 a second housing section;

the first housing section and the second housing section together forming an open end and a cavity, wherein at least a portion of the contiguous flexible circuit and at least a portion of the second circuit board is disposed in the cavity

25 a first compressible member disposed between the first housing section and the first flexible circuit portion; and

a second compressible member disposed between the second housing section and the second flexible circuit portion.

13. The system of claim 12, wherein the first compressible member and the second compressible member is selected from the group comprising:
an elastomer; and
a spring.

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14. The system of claims 10 or 12, wherein the cavity in the housing is sized in the z-direction so as to allow the flexible circuit to accommodate vertical tolerance accumulation between the first circuit board and the second circuit board.

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15. The system of claim 1, wherein the first flexible circuit and the second flexible circuit are urged adjacent to one another proximate an edge of the second circuit board, thereby reducing interconnect impedance between the first circuit board and the second circuit board.

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16. The system of claim 1, further comprising
a rigid circuit board disposed between the first flexible circuit and the second flexible circuit. the rigid circuit board having a rigid circuit board edge disposed adjacent an edge of the second circuit board; and

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wherein the coaxial assembly is disposed between the first circuit board and the second circuit board.